United States Environmental Protection Agency
Office of Water
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EPA

Fact Sheet

The National Study of Chemical Residues in Lake Fish Tissue

Summary

The U.S. Environmental Protection Agency is conducting a screening-level study to estimate the national distribution of selected persistent, bioaccumulative and toxic chemical residues in fish tissue from lakes and reservoirs of the continental United States. This four-year study will define national background levels for 265 chemicals in fish, establish a baseline to track progress of pollution control activities, and identify areas where contaminant levels are high enough to warrant further investigation.

Background

Monitoring fish for chemical contamination is a critical activity for protecting human health in lakes and reservoirs because they are important areas for sport fishing and other recreational activities. The 2000 update to EPA's National Listing of Fish and Wildlife Advisories reports that 23% of the Nation's lake acres are under fish consumption advisories.

Lakes and reservoirs occur in a variety of landscapes and can receive contaminants from several sources, including direct discharges into the water, air deposition, and agricultural or urban runoff. Lakes are the focus of this study because they are environments where contamination accumulates and is more readily detectable.

EPA initiated The National Study of Chemical Residues in Lake Fish Tissue (or National Fish Tissue Study) in 1998 as a priority activity under the Agency's Persistent, Bioaccumulative and Toxic Chemicals (PBT) Initiative. It supports the PBT Initiative by providing data for a large set of chemicals in fish that could affect the health of people and wildlife that eat fish from these environments.

Why is this study important?

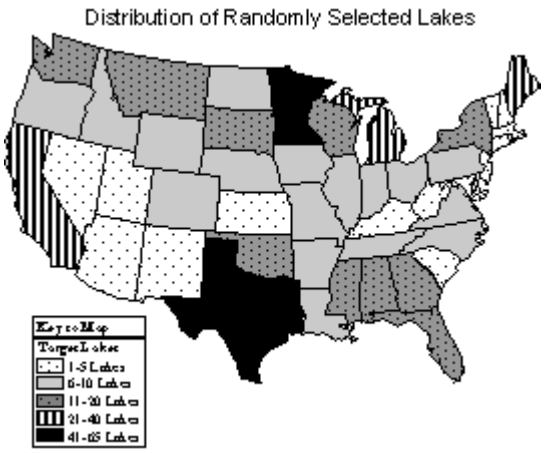
The National Fish Tissue Study is important because:

- It is the first national fish tissue survey to be based on a random sampling design, which will allow EPA to develop national estimates of the mean levels of persistent, bioaccumulative and toxic chemicals in fish tissue.
- It will provide data on the largest set of persistent, bioaccumulative and toxic chemicals ever studied in fish.

What are the basic elements of the study design?

EPA is working with partner agencies over a four-year period to collect fish from 500 randomly selected lakes and reservoirs of the estimated 260,000 lakes and reservoirs in the continental United States. The lakes are divided into 6 size categories, ranging from 2.5 to over 900,000 surface acres, with a similar number of lakes in each category. Before sampling, field teams verify that each lake is a permanent body of water with a depth of at least one meter.

Sampling teams are applying consistent methods nationwide to collect composites of one predator species and one bottom-dwelling species at each lake. Composites consist of 5 adult fish of similar size that are large enough to provide 560 grams (20 ounces) of tissue for analysis of fillets for predators and whole bodies for bottom dwellers. EPA is analyzing each composite for 265 chemicals (including PCB congeners and breakdown products).



What chemicals did EPA select for the study?

EPA is analyzing the fish tissue for:

- 2 metals (mercury and arsenic)
- 17 dioxins and furans
- 159 PCB congeners
- 43 pesticides
- 40 other organics (e.g., phenols)

Who is participating in the study?

EPA formed a national network of study partners to pursue a broad range of activities, from development of the study design to collection of fish for study. Important contributors include:

- EPA Office of Water
- EPA Office of Research and Development
- EPA Office of Prevention, Pesticides, and Toxic Substances
- EPA Regions
- State and Tribal Agencies
- National Park Service and TVA

What are the key study accomplishments and milestones?

The study consists of four phases:

Planning (1998-1999)
- study design development
- random lake selection
- target chemical selection

Mobilization (1999-2000)
- orientation workshops
- development of partnerships
- production of quality assurance plans and sampling plans
- lake reconnaissance
- pilot sampling events at 26 lakes

Implementation (2000-2003)
- sampling of 261 lakes in 44 states (2000-2001)
- chemical analysis of 288 first year fish samples (2001)
- database development
- sampling of about 125 lakes per year (2002-2003)
- chemical analysis of about 250 fish samples per year (2001, 2002, and 2003 samples)

Data Analysis and Reporting (2004-2005)
- statistical analysis of fish tissue residue results
- preparation and distribution of a final study report
- data archive into EPA's new STORET

Who do I contact for more information?

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